

12/4/17

"If you love what you have, then you have what you need." - Lisa Lopicollo

HW: Complex Fractions worksheet #3, 4, 5, 7

AIM: How do we Simplify Complex Fractions?

Warm Up:

Homework Check:

$$9) \frac{y+6}{y+3} \quad 11) \frac{13}{20a} \quad 13) -1 \quad 15) \text{ OMIT}$$

$$9) \frac{\cancel{(y+3)}^1 y}{\cancel{(y+3)}_1 y-3} - \frac{18}{y^2-9} \quad \text{LCD: } (y-3)(y+3)$$

$$\frac{y+3y}{(y+3)(y-3)} - \frac{18}{(y+3)(y-3)} = \frac{\cancel{(y+3)}^1 y-18}{\cancel{(y+3)}_1 (y-3)} = \frac{y+6}{y+3}$$

$$11) \frac{\cancel{(4)}^1 2}{\cancel{(4)}_1 5a} + \frac{1}{4a} \frac{\cancel{(5)}^1}{\cancel{(5)}_1} \quad \text{LCD } 20a$$

$$\frac{8}{20a} + \frac{5}{20a} = \boxed{\frac{13}{20a}}$$

$$13) \frac{3}{x-3} + \frac{x}{3-x}$$

$-1(x-3)$

$$\frac{3}{x-3} + \frac{-x}{x-3} = \frac{3-x}{x-3} = \boxed{-1}$$

$$3-x$$

$$-1(-3+x)$$

$$-1(x+-3)$$

$$-1(x-3)$$

$$\frac{1}{-2} = \frac{-1}{2}$$

True!

Steps to Simplify Complex Fractions

- 1) Combine your numerator into a single fraction.
- 2) Combine your denominator into a single fraction
- 3) Multiply the fraction from numerator (Step 1) by the reciprocal of the fraction from the denominator (from Step 2)
- 4) Simplify if possible.

1)

$$\frac{\cancel{x}3}{\cancel{x}2} + \frac{3\cancel{2}}{x\cancel{2}} \quad \text{LCD: } 2x \quad \frac{3x}{2x} + \frac{6}{2x} \Rightarrow \frac{3x+6}{2x}$$

$$\frac{\cancel{x}2}{\cancel{x}1} + \frac{4\cancel{1}}{x\cancel{1}} \quad \text{LCD: } x \quad \frac{2x}{x} + \frac{4}{x} \Rightarrow \frac{2x+4}{x}$$

Step
3

$$\frac{3(x+2)}{2x} \cdot \frac{x}{2x+4} = \frac{3\cancel{(x+2)}}{2\cancel{x}} \cdot \frac{\cancel{x}}{2\cancel{(x+2)}} = \boxed{\frac{3}{4}}$$

Simplify each of the following.

2.

LCD: $3w$

$$\frac{\frac{7}{3} + \frac{1}{w}}{\frac{2}{w} - \frac{1}{3w}} \quad \frac{\frac{7w}{3w} + \frac{3}{3w}}{\frac{6}{3w} - \frac{1w}{3w}} \Rightarrow \frac{7w+3}{3w}$$

LCD: $3w$

$$\frac{\frac{2}{w} - \frac{1}{3w}}{\frac{6}{3w} - \frac{1w}{3w}} \Rightarrow \frac{6-w}{3w}$$

Step:
3

$$\frac{7w+3}{\cancel{3w}} \cdot \frac{\cancel{3w}}{6-w} = \boxed{\frac{7w+3}{6-w}}$$

7.

$$\frac{1 - \frac{1}{x}}{x - 2 + \frac{1}{x}}$$

8.

$$\frac{\frac{a}{a+b}}{1 - \frac{b}{a+b}}$$

9.

$$\frac{1 + a^{-1}}{a - a^{-1}}$$